

# Policy Recommendation For Telemedicine Services After Covid-19 Pandemic

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**Abstract.** During Coronavirus Disease 2019 (COVID-19) pandemic, the use of telemedicine services in Indonesia rose. Telemedicine service policies were released as an emergency condition during the pandemic. Meanwhile, the post-pandemic policies on telemedicine have never been formulated. This study aimed to construct the policy recommendation related to telemedicine services in Indonesia in the COVID-19 post-pandemic. The policy recommendations were developed after an initial analysis of user needs. The respondents were 102 telemedicine users who were over 18 years old. Results showed that most telemedicine users (61%) were worried about misdiagnosis, and others (52.9%) were worried about data security and confidentiality. The conceptual policy recommendation was developed based on the situation analysis. Multi-stakeholder cooperation across institutions such as the Indonesian Ministry of Health, the Ministry of Information Technology, the Food and Drug Administration, the Association of Health Service Facilities, professional organizations, and telemedicine startups. Such cooperation may harmonize the implementation of policies.

## 1 Introduction

The use of telemedicine services has rapidly grown during Coronavirus Disease 2019 (COVID-19) pandemic. Telemedicine is a health service that can be done from distance by health professional using information and communication technology. These services include the exchange of information on diagnosis, treatment, disease and injury prevention, research and evaluation, and continuing education of health care providers for the benefit of improving individual and community health [1]. It can be an alternative solution to improve health coverage in the pandemic era to minimize face-to-face consultation [2]. Telemedicine has other benefit impacts i.e. improve the efficiency cause of reducing travel cost and time, increasing access to health services, especially for rural populations, and reducing disparities in health services[3][4]. In Indonesia, the use of telemedicine has risen during the COVID-19 pandemic. The Indonesian Government has also improved telemedicine services by enforcing collaboration between hospitals and medical personnel [5]. Nevertheless, besides

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the positive effects, the use of technology also yields negative impacts causing ethical and legal issues such as data leakage, misdiagnosis, patient legal protection, and others [6].

Indonesia has released the Indonesian Minister of Health Regulation No. 20 year 2019 on Implementation of Telemedicine Between Health Services Facilities. During the COVID-19 pandemic, the Indonesian Government has issued policies related to telemedicine services through the Circular Letter Number HK.02.01/MENKES/303/2020 concerning the Organization of Health Services through the Utilization of Information and Communication Technology to Prevent the Transmission of Coronavirus Disease 2019 (COVID-19). This policy states that telemedicine services are allowed to be carried out during Public Health Emergencies and/or COVID-19 pandemics [7]. Besides, the Indonesian Medical Council also issued Indonesian Medical Council Regulation Number 47 of 2020 concerning the Clinical Authority and Medical Practice through Telemedicine during the COVID-19 pandemic in Indonesia [8]. These policies are used as the basis to conduct telemedicine services during the COVID-19 pandemic. But, there are also disharmony of telemedicine services during COVID-19 pandemic. Disharmony were happened because the circular contradicts with the Indonesian Minister of Health Regulation [9].

There are previous studies related to telemedicine practice in Indonesia. Tarigan et al (2018) states that telemedicine practice has many legal issues such as licensing problem related to medical doctor, informed consent, security and insurance issues [10]. Wijaya (2021) also stated that there are many challenges in the telemedicine implementation such as low bandwidth, unauthorized and illegal services provider, and public acceptance [11]. But they don't recommend the policy related to comprehensive aspects in telemedicine implementation especially after Covid-19 pandemic.

Telemedicine has some potential to be implemented in a normal situation, not only in the Covid-pandemic. Since telemedicine service policies for the COVID-19 post-pandemic have not been regulated, this study aims to develop a policy recommendation related to telemedicine services in the post-pandemic.

## **2 Methods**

This study was conducted in two steps. The first step was the initial assessment based on quantitative research and the second step was literature review study.

### **2.1. Quantitative research**

This step was quantitative research through an online questionnaire from February to April 2022. The questionnaire was distributed to the telemedicine users in Indonesia using *accidental sampling technique*. The inclusion criteria was the respondents have used telemedicine services, and in the age over 18 years old. And the exclusion criteria were the uncomplete data, and double respondents. Based on the Slovine's formula, the minimum sample was 73 respondents. The telemedicine users who were willing to be the respondents were 102 respondents. Data were then analyzed through descriptive analysis related to legal issues and evidence of telemedicine services in Indonesia. The research was granted ethical approval by the Health Research Committee Ethics, Faculty of Public Health of Universitas Diponegoro with the ethic number: 50/EA/KEPK-FKM/2022.

### **2.2. Literatur Review Study**

The literature review study was done from April to May 2022. The data were gathered from articles related to ethical and legal issues of telemedicine implementation on Scopus, Google

Scholar, and ProQuest databases using keyword “ethical”AND”legal”AND”Issues”AND”Implementation”AND”Telemedicine”. Data were analyzed and describe with narrative review approach.

### 3 Results and Discussions

The policy recommendation was developed by initial assessment based on quantitative research and literature review study.

#### 3.1. Quantitative Research

##### 3.1.1. Characteristics of Respondents and Experience of Telemedicine Utilization

Table 1. Characteristics and experience of telemedicine users

Variables		f	%
Gender	Men	15	14,7
	Women	87	85.3
Age	18-20 years	54	52.9
	21-30 years	31	30.4
	31-40 years	12	11.8
	>40 years	5	4.9
Occupation	Student	78	76.5
	Civil servant	9	8.8
	Entrepreneur	8	7.8
	Others	7	6.9
Education	Senior high school	59	57.8
	Vocational degree	1	1.0
	Bachelor’s degree	36	35.3
	Master’s degree	6	5.9
Time	Less than one month	9	8.8
	1-6 months	51	50
	7-11 months	12	11.8
	1-5 years	29	28.4
	>5 years	1	1

Based on Table 1, most telemedicine users (85.3%) were women, 52.9% were at the age of 18-20 years, and 76.5% were students. Based on these characteristics, telemedicine users were categorized as the millennial generation (Y and Z generations). The potency to use telemedicine will be increased in the future. In Indonesia, the health services digitalization be the one of six pillars that have been developed to strength health resilience [12]. The millennial generation that was born when technology developed massively also be the most of population in Indonesia. The generation, therefore, becomes familiar with telemedicine technology [13].

In the Covid-19 pandemic, the use of telemedicine has drastically increased not only in Indonesia but also in several other countries [14]. Based on the need analysis, 50% of respondents used telemedicine for 1-6 months in the Covid-19 pandemic era (table 1).

### 3.1.2. Ethical and Legal Issues Related to Telemedicine

Although telemedicine services have many benefits, there are also legal issues of telemedicine services.

Table 2. Ethical and Legal Issues Related to Telemedicine Services based on User Perspective

Ethical and Legal Issues	F	%
Misdiagnosis	61	59.8
Unclear legal protection	21	20.6
No authorized institution	25	24.5
Confidentiality and security of patient data	54	52.9
False treatment	39	38.2
Doctoroid phenomenon	21	20.6
False dosage of treatment	18	17.6
Illegal application	19	18.6
Others:	6	5.8
1. Unsafe medicine		
2. Clinicians give services to many patients at the same time		

Based on the user experience of telemedicine services, many legal and ethical issues rose. The first issue was the misdiagnosis in the telemedicine service which possibly leads to false treatment endangering patient safety. In principle, inaccurate diagnosis not only can occur in online health services, but also offline health services. In the complex cases or initial examinations, doctors often make several differential diagnoses accompanying the main diagnosis. Establishing a diagnosis often requires additional tests such as laboratory or radiology. However, online healthcare opens up greater opportunities for misdiagnosis [15]. This is because services can only be performed based on anamnesis without a direct physical examination. Standard medical devices need to be developed so that they can support remote examinations. If this has not been implemented, doctors should be careful in determining the diagnosis and providing treatment.

The second issue was unclear legal protection and application. In Indonesia, there was no specific and detailed regulation related to telemedicine practice. The latest regulation concerning telemedicine is the Indonesian Minister of Health Regulation Number 24 of 2022 concerning Electronic Medical Records, which among others regulates the obligation to use electronic medical records in the implementation of telemedicine [16]. However, there is no further explanation regarding this matter.

The third issue was the confidentiality and security of patient data. Telemedicine will involve electronic medical and health records that contain many personal or health data called patient-generated health data (PGHD). Data security is crucial because it relates to patient safety. Moreover, Indonesia will implement the Indonesia Health Services (IHS) platform which integrates various patient data in the "SATU SEHAT" platform [17]. Therefore, it is important to develop a policy that regulates how to protect the patient data confidentiality

## **3.2. Ethical and Legal Issues of Telemedicine Implementation Based on Literatur Review Study**

Based on the literature study, various ethical and legal issues can arise in the application of telemedicine. Based on Solmini *et al* (2021), there were many legal and ethical issues in telemedicine services such as misdiagnosis, malpractice and professional liability, informed consent and autonomy in remote therapy, patient privacy and confidentiality, equity of access, professional and patient relationship, and quality of care [18]. Besides that the clinician and patient responsibilities, commercialization, and also information needs and evaluation were arised as ethical and legal issues in telemedicine service [19].

### **3.2.1. Misdiagnosis and malpractice**

Misdiagnosis can occur in telemedicine services [20]. In the health service, it could be caused by late and wrong diagnosis. Additionally, inappropriate medical device standards could also cause patient misdiagnosis [21]. With the limited support of medical devices standard, clinicians should be careful to give medical treatment to patients. For example in the United States, dermatologists cannot give acne treatment or prescribe medication through telemedicine [22] since it potentially causes a high risk of malpractices. In teledermatology practice, different medical standards, lighting, and compression may contribute to different diagnoses [23]. The use of telemedicine can be further optimized as telemonitoring or teleconsultation for patients who have previously met offline with doctors. Based on the research of Bourdon *et al* (2020), teleconsultation maintains access to satisfactory health services for patients with severe ophthalmological disorders while maintaining social distancing and sanitary precaution [24].

### **3.2.2. Doctor and patient relationship, informed consent, and professional liability**

In the face to-face consultation, relationship between doctor and patient begins when the patient is willing to be examined further by the doctor. At this stage, the patient's consent can be given either in the form of implied or expressed consent [25]. Informed consent will be done after the medical doctor or healthcare professionals delivered many informations related to patient's examination or therapy. The patient can give the consent or refusal the medical treatment. With this agreement, both doctors and patients are bound by their respective rights and obligations. But, in the telemedicine services the informed consent was unclear [26].

Consent must be obtained in telemedicine services. This relates to information provided, consultation, treatment, or monitoring. So it is necessary to clarify whether the legal aspects of informed consent in telemedicine are the same as face-to-face health services [27].

### **3.2.3 Patient privacy and Confidentiality**

The right to privacy has been part of medical ethics and stated in the Hippocrates Oats. In the code of ethics, health practitioners must keep the patient's data even after his death. This right also should be fulfilled even in telemedicine. There is a potential for patient's data leakage related to electronic medical or health record [28]. It is the responsibility to maintain that information and must be transmitted securely. The password security should be maintained to avoid unauthorized access to information. However, privacy cannot be guaranteed with the use of telemedicine.

### 3.2.4. *Equity of Access*

The telemedicine implementation, application of telemedicine on a wide scale can lead to potential disparities in health services, especially for people with limited literacy or access such as rural communities, racial/ethnic minorities, older adults, and those with low incomes, limited health literacy [29]. In addition, the application of telemedicine is not completely free so that it will be difficult for people who cannot afford it to access it [30].

## 3.3. **Policy Recommendation**

The government regulation related to telemedicine in Indonesia was Indonesian Minister of Health Regulation Number 20 of 2019 concerns the Implementation of Telemedicine Services between Health Service Facilities [1]. But, this regulation only state about teleconsultation between health professionals and health facilities. Further, the Circular Letter Number HK.02.01/MENKES/303/2020 for teleconsultation between patient and health professional has been released during Covid-19 pandemic [7], but there are no details and spesific regulation and just be implemented in emergency condition. Legal protection for telemedicine services is important to maintain patient safety and the quality of health services.

Based on the need analysis, policies related to telemedicine services and medical device standards were the potential to be developed. The policies were provided for medical device standard and liability, supervising institutions, online prescription regulation, data security and confidentiality, and also telemedicine financing.

### 3.3.1. *Medical Device Standards and Professional Liability*

Medical device standard is important to improve patient safety in healthcare services. In addition, the use of medical device standards can maintain the quality of the data [31]. It can ensure the data that were sent by patients with the data that were received by health workers. Besides that, the medical device standard also can be guaranteed data protection and security through encryption methods.

In many telemedicine implementations, the use of instant messaging such as WhatsApp is still done during the pandemic [32]. This is due to the limitations of the platform and funding developed [33]. The use of these media is quite risky for health services, especially regarding consultations that require images, such as in the dermatology case. Data compression and lighting can affect the final diagnosis [34]. Others, the patient data is also stored in a private gallery which has the potential for data leakage.

Without the support of standardized medical devices, health workers also need to consider the extent to which health services are needed. Is the service provided sufficient for consultation without treatment, monitoring services, or is it necessary to have an offline meeting beforehand for diagnosis? The extent of the services provided needs to be further regulated in regulations related to telemedicine.

The definition of malpractice in telemedicine needs to be further clarified before further stipulation regarding liability. If malpractice or data leakage occurs, then who are responsible needs to be clarified [35]. Do health workers provide telemedicine services? or is it a health facility providing telemedicine services? or third parties such as application platforms for telemedicine service providers in collaboration with health care facilities? Or should the whole party be held accountable? This needs to be clarified further in regulations related to telemedicine.

### *3.3.2. Supervising Institutions*

Based on the need analysis, telemedicine users expected to find institutions that specifically handled telemedicine services. In this case, licensing, monitoring, and legal protection for telemedicine services could be secured if the telemedicine service system is managed collaboratively across institutions. The cooperation process occurred between the Indonesian Telemedicine Association (ATENSI) (health start-up companies), the Indonesian Ministry of Health, the Indonesian Ministry of Communication and Informatics, the Social Security Agency for Health, the Indonesian Ministry of Home Affairs to advance economics, business, and management research and other aspects [36]. However, the institutions had unclear roles, regulations, and responsibilities.

### *3.3.3. Online Prescription Regulation*

Online prescribing via telemedicine raises ethical and legal issues. Telemedicine services could pose dishonest information, especially about the actual patient's condition. Several studies have shown indications of overprescribing in the application of telemedicine services [37]. Without clear rules and guidelines, prescribing via telemedicine is quite risky. Prescribing drugs such as psychotropic drugs online in this case was quite risky and required some caution. For example, in the United States, informing the administration of methadone and buprenorphine via telemedicine was controversial Medications for opioid use disorder (MOUD) [38].

Another thing that is worrying about overprescribing telemedicine is the lack of medical information obtained due to the limitations of medical devices such as tools for physical and supporting examinations. Especially if the doctor and patient have never met offline before. What is possible is to include face-to-face requirements before patients have online prescribing. This condition is based on consideration of the risk of overprescribing in pediatric patients and the use of opioids and potent drugs [37].

Thus, regulations about prescribing via telemedicine must be formulated since this practice deals with patient protection and its issues such as the risk of abuse and misdiagnosis.

### *3.3.4. Data Security and Confidentiality*

Patient data security is very crucial. Medical record data must be stored and protected [39]. Indonesian government has released the Indonesian Minister of Health Regulation Number 24 of 2022 concerning Electronic Medical Records that stated the telemedicine practice should use the electronic medical record. Patient confidentiality must be maintained by the doctor and healthcare facility even after the patient has died. Confidentiality can be disclosed upon the patient's will or the needs of the court [39]. In addition, patient medical records are legal evidence that can be used for a medical service dispute. Thus, behavioral improvements among the health workers and technical security of the system are required to keep the medical record services confidential[40].

Telemedicine service providers who are also providers of electronic systems must have and comply with electronic system guarantee procedures by preventing leakage or damage to stored electronic data. This is stated in Article 20 paragraph (1) of Government Regulation Number 82 of 2012 concerning Electronic System and Transaction Operators [41]. Electronic System Operators must have cybersecurity that is updated regularly to avoid cyber attacks and it is necessary to back up data periodically.

Medical record data or other patient data need to be backed up and maintained periodically. In addition, regular penetration testing can also be done to find out if there are holes that allow attacks to occur. Security with antivirus also needs to be improved in the

existing system [42]. In internal strengthening which is influenced by the behavior of users of the telemedicine system, there are several aspects that need to be considered, namely related habits in using devices, access to information systems, internet behavior, and unusual event [42]. There is a need for guidance on who may access the system, the use of secure passwords, training in the use of the internet and secure data, and regulations regarding the security and confidentiality of health data in electronic form. Strict sanctions also need to be further regulated in the regulation.

### 3.3.5. Telemedicine Financing

Financing regulations on telemedicine services are related to the National Health Insurance. In Indonesia, not all telemedicine service applications are integrated with the National Health Insurance, and patients have to pay the service fees themselves. Telemedicine can increase the coverage and equity of health services, and thus the government requires to link the payment system of telemedicine services with the National Health Insurance after the COVID-19 pandemic. Presidential Regulation Number 82 of 2018 concerning Health Insurance explicitly states that the Social Security Agency for Health can provide compensation for telemedicine service providers in areas with minimal physical facilities [43]. This policy is implemented to accommodate Article 19 Paragraph (2) in the Indonesian Regulation of the Minister of Health Number 90 of 2015 concerning the Implementation of Health Services at Health Service Facilities in Rural and Remote Areas. Telemedicine can bring health specialists to provide quality health services in health care facilities, especially those located in remote areas [44].

## 4 Conclusion

Telemedicine implementation poses ethical and legal issues. This study showed most of the respondents were worried about misdiagnosis, patient data security, and confidentiality. Others literature also shown related to informed consent, doctor-patient relationship, and also equity of access. The government need to further regulations related to medical device standards and patient legal protection, institutional supervision, data security and confidentiality, and also telemedicine service financing.

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### Conflict of Interest Statement

The authors declare no conflict of interest in this study.

## References

1. Indonesian Minister of Health Regulation No. 20 year 2019 on Implementation of Telemedicine Between Health Services Facilities
2. A. Mehrotra, R. Sacha Bhatia, and L. Centaine Snoswell. *JAMA* **325.5** (2021)

3. N Armfield., T Donovan, M Bensink, M., & A Smith. The costs and potential savings of telemedisin for acute care neonatal consultation: Preliminary findings. *Journal of Telemedisin and Telecare*, **18**:8 (2012)
4. S Nazareth, N Kontorinis, N. Muwanwella, A. Hamilton, N. Leembruggen, & W.Cheng,. Successful treatment of patients with hepatitis C in rural and remote Western Australia via telehealth. *Journal of Telemedisin and Telecare*, **19**:2 (2013)
5. M Muslimin, C Nasirin, S Salahudin, and B Tawakkal. *Palarch's Journal Of Archaeology Of Egypt/Egyptology* **17**,7 (2020)
6. RT Budiyaniti, PM Herlambang. *Jurnal Hukum Kesehatan Indonesia*. **1**, no. 01 (2021)
7. Circular Letter Number HK.02.01/MENKES/303/2020 concerning the Organization of Health Services through the Utilization of Information and Communication Technology to Prevent the Spreading of Coronavirus Disease (COVID-19)
8. Indonesian Medical Council Regulation Number 47 of 2020 concerning the Clinical Authority and Medical Practice through Telemedicine during the COVID-19 Pandemic in Indonesia
9. H Tri Muhammad. *MIMBAR Jurnal Sosial Dan Pembangunan* **37**.2 (2021)
10. IJ Tarigan, B Alamsyah, S Aryza, APU Siahaan, and M.I. Indrawan. *International Journal of Civil Engineering and Technology* **9**, no. 10 (2018)
11. F.P Wijaya. The Potential Implementation of Telemedicine in Frontier, Outmost, and Underdeveloped Region of Indonesia. In *2021 2nd International Conference on ICT for Rural Development (IC-ICTRuDev)*, pp. 1-6. IEEE, (2021).
12. PKM Soesilo, and F Rahman. "The Pillars of Survival in the COVID-19 Pandemic: The Case of Indonesia." In *Community, Economy and COVID-19*, pp. 267-289. Springer, Cham, (2022)
13. Khotimah, FK Husnul, I Fahmi, and S Hartono. The Antecedents of Intention to Use Telemedicine. *Journal of Consumer Sciences* **7**, no. 2 (2022)
14. G Raffaele, PC Pafundi, R Nevola, L Rinaldi, C Acierno, A Caturano, T Salvatore, LE Adinolfi, C Costagliola, and FC Sasso. *Journal of diabetes research* (2020)
15. N Alhajri, MCE Simsekler, Buthaina Alfalasi, Mohamed Alhashmi, Majd AlGhatrif, Nahed Balalaa, Maryam Al Ali et al. *JMIR medical informatics* **9**, no. 6 (2021)
16. Indonesian Minister of Health Regulation Number 24 of 2022 concerning Electronic Medical Records
17. Setiaji. Strategi Transformasi Digital Kesehatan Indonesia 2024. Indonesian Ministry of Health (2021). Available from: <https://persi.or.id/wp-content/uploads/2021/12/Strategi-Transformasi-Digital-Kesehatan-Indonesia-2024.pptx.pdf>
18. Solimini, Renata, et al. "Ethical and Legal Challenges of Telemedicine in the Era of the COVID-19 Pandemic." *Medicina* **57**.12 (2021)
19. B. Kaplan. *International Journal of Medical Informatics*, **143** (2020)
20. A Sulistiyono, RT Budiyaniti. *Eubios journal of asian and international bioethics* **29**, no. 4 (2019)
21. S Benedict. *Computer methods and programs in biomedicine* **64**, no. 3 (2001)
22. A.L. Fogel & K.Y. Sarin. *Journal of telemedicine and telecare* **23**(1):19-25. (2017)
23. A Marine, S.L. Cunff, A. Haudrechy, and W. Blondel. Image quality assessment for teledermatology: from consumer devices to a dedicated medical device. In *Design and Quality for Biomedical Technologies X*, vol. **10056**, pp. 105-112. SPIE (2017)
24. H Bourdon, R. Jaillant, A. Ballino, P. El Kaim, L. Debillon, S. Bodin, and L. N'Kosi. *Journal francais d'ophtalmologie* **43**, no. 7 (2020)
25. Rao, KH Satyanarayana. *Journal of cutaneous and aesthetic surgery* **1**, no. 1 (2008)
26. N.R. Antarsih, S.R. Setyawati, Sri Ningsih, E. Sulaiman, and N. Pujiastuti. Telehealth Business Potential in Indonesia. In *International Conference on Social, Economics, Business, and Education (ICSEBE 2021)*, pp. 73-78. Atlantis Press, (2022)

27. N Ateriya, A Saraf, V P Meshram, and P Setia. *National Medical Journal of India* **31**, no. 4 (2018)
28. RA Razali, N Jamil. "A quick review of security issues in telemedicine." In *2020 8th International Conference on Information Technology and Multimedia (ICIMU)*, pp. 162-165. IEEE (2020)
29. N Sarah, EC Khoong, CR Lyles, and L Karliner. "NEJM Catalyst Innovations in Care Delivery" **1**, no. 3 (2020)
30. G Nittari, R Khuman, S Baldoni, G Pallotta, G Battineni, A. Sirignano, G Ricci. *Telemedicine and e-Health*, **26**: 12 (2020)
31. A Romanovs, E Sultanovs, E Buss, Y Merkuryev, and G Majore. "Challenges and solutions for resilient telemedicine services." In *2020 IEEE 8th Workshop on Advances in Information, Electronic and Electrical Engineering (AIEEE)*, pp. 1-7. IEEE (2021)
32. Gulati, Sanjeev, and Amrita Sengar. *Pediatric Nephrology* **36**, no. 8 (2021)
33. S.M. Taifour. Sending photos through WhatsApp: A faster method for teleconsultation. *Journal of Local and Global Health Science*, **2**, 1 (2014)
34. MA Bakhshali, M Gholizadeh, P Layegh, Y Nahidi, Z Memarzadeh, N T Meybodi, and S Eslami. *Skin Research and Technology* **27**, no. 6 (2021)
35. E Parimbelli, B. Bottalico, E. Losiouk, M. Tomasi, A. Santosuosso, G. Lanzola, S. Quaglino, and R. Bellazzi. *International journal of medical informatics* **112**:90-98 (2018)
36. I Sari and F Santiago. "Juridical Analysis of Health Service Regulation Through Telemedicine in Indonesia." In *Proceedings of the 2nd International Conference on Law, Social Science, Economics, and Education, ICLSSEE 2022, 16 April 2022, Semarang, Indonesia* (2022)
37. LC Hoffman. *American Journal of Law & Medicine* **46**, no. 2-3 (2020)
38. Chan, Brian, C Bougatsos, C Kelsey, D. McCarty, S. *Substance abuse* **43**, no. 1 (2022)
39. Indonesian Ministry of Health Regulation Number 269 the year 2008 on Medical Record
40. M. Langarizadeh, F. Moghbeli, and A. Aliabadi. *Medical Archives* **71**, no. 5 (2017)
41. Government Regulation Number 82 of 2012 concerning Electronic System and Transaction Operators
42. PM Herlambang, RT Budiyaniti, and A Novianto. *Eubios Journal of Asian and International Bioethics* **28**, no. 5 (2018).
43. Presidential Regulation Number 82 of 2018 concerning Health Insurance
44. Regulation of the Minister of Health Number 90 of 2015 concerning the Implementation of Health Services at Health Service Facilities in Remote and Very Remote Areas